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ABSTRACT

The behavior of junior high school students and teachers in English and mathematics classes was observed from November through April in an attempt to identify the relationship between teacher and student behavior, compare behaviors in the two different classes, and note changes in behavior over this period. Some fluctuation was observed in task orientation, attention, student initiated comments and social contacts. Small variations in behavior were observed in comparing English and mathematics classes. Descriptions of thirty specific behaviors observed over this period are provided and results are presented in both tabular and graphic form. An analysis of the data is presented. (JD)

Changes Over Time in Process Measures of Classroom Behavior

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Changes Over Time in Process Measures Of Classroom Behavior

Most findings about classroom processes are reported as aggregated means or averages of given behaviors summed across observations. Typically, relationships between classroom measures and outcome (product) measures are determined from means of scores of events summed across occasions (observations). Also, classroom coding systems which count individual student behaviors (Brophy & Good, 1970) similarly aggregate student data to obtain class means on variables of interest. However, it may also be useful to look at the variability of such measures across a school year to determine whether or not there are trends in the data.

Few studies of classroom processes lend themselves to analyses which examine the fluctuations of process measures over time, since large amounts of data are required to produce stable estimates at each point in the year, and because many classroom studies are conducted over short periods of time. The Texas Junior High School Study, however, does lend itself to this kind of analysis. This large field-based investigation of teacher effects on student achievement and attitudes was conducted over most of the school year 1974-75; data collection began in November and continued to mid-May. Sixty-eight seventh- and eighth-grade teachers (29 math and 39 English) were observed in two of their class sections by trained observers. Each of the 136 classes was observed an average of 20 times for one hour each with a variety of high and low inference measures. These data were used as predictors in a series of linear regression models to describe relationships between

the classroom processes and two criteria: student achievement and student attitudes.

Those interested in a report of the initial findings from the full study should consult Evertson, Anderson, and Brophy (Note 1). The purpose of the present report is to identify any systematic changes in the measures of classroom behavior of teachers and pupils over the six months of the study, and also to determine whether such changes were comparable for math and English classes. Data to be reported here consist of 15 high inference rating scales and 15 low inference behavioral rate measures.

Procedure

Data were available for 56 math classes (two classes were dropped because of ceiling effects on the pre- and posttests) and 78 English classes. For each of the 67 teachers' two classes, available data records were sorted by the month during which the observation was done and six means were computed for each of the 30 variables.

High Inference Ratings

These ratings were filled out at least once for each class period during which low inference coding was also done. The 15 scales of the Classroom Observation Scales (COS) instrument are listed below. The first 12 scales are 5-point scales (0-4); the last three scales are binary, scored as to whether or not such questioning took place during the hour of observation (0,1). Definitions of the scales and the various points along each are presented below:

1. Level of attention. Pupil orientation toward the teacher or task at hand (0 - Fewer than half of the students are attentive most of the time; 4 - All of the students are attentive most of the time).

2. Teacher initiated problem solving. This scale indicates the degree to which the teacher addresses questions and problems to the entire class. Student responses are followed by teacher's directing elaborating questions to other students. Teacher probes or delves into student answers (0 - Little or no teacher-initiated problem solving. Other activities predominate. 4 - Most of the teacher's behavior follows the above description.)

3. Pupil-to-pupil interaction. Substantive pupil utterances in which one pupil interacts with another pupil, a group of pupils, or responds indirectly to the teacher. (0 - No pupil-to-pupil interaction. All pupil behavior involves routine responding or following directions; 4 - Student-to-student interaction occurs frequently during one-half or more of the observed period.)

4. Teacher presentation. The relative amount of class time occupied by teacher presentation of substantive information. Lecturing, reading to the class, or answering pupil questions would be instances of this behavior. (0 - teacher presentation occurs 0-20% of the time; 4 - Teacher presentation occurs 80-100% of the time.)

5. Negative affect. This scale includes behaviors that show hostile or negative feelings on the part of either the teacher or pupils, verbally or nonverbally. It can include criticism, ridicule, pupil resistance, or sarcasm. (0 - No negative affect; 4 - Several

moderately negative instances or one or more instances of severe negative affect.)

6. Positive affect. Teacher behaviors that show support or positive regard for pupils and their behavior, including smiling, kidding and joking, encouragement, or praise. (0 - Absence of positive affect (but not necessarily negative); 4 - Three or more instances of obviously sincere support or regard.)

7. Higher cognitive level student behavior. Focuses upon pupil verbal behaviors that give evidence of higher or more complex cognitive processes, including generalization or inference, defining concepts, or problem solving. Does not include rote or simple associative reproduction of responses, simple descriptive reporting, or giving opinions without justifications. (0 - Higher cognitive level processes do not occur; 4 - Higher cognitive level processes occur six or more times in a 15-minute period.)

8. Passive pupil behavior. This scale assesses the extent to which pupils engage in passive, as opposed to active, modes of behavior. Passive pupil behaviors include withdrawal by pupils from engagement, visual wandering, passive observation. (0 - No more than one pupil is passively disengaged at any one time; 4 - Passive behavior is exhibited by a third or more of the class much of the time.)

9. Convergent-evaluative interaction. This scale is characterized by a focus upon obtaining the correct answer to the teacher's question, with little or no attempt to follow up on the contact once the answer has been given. (0 - Little or no

convergent-evaluative interaction; behavior follows some other pattern. 4 - Almost all interaction is convergent-evaluative (75% or more).)

10. Task orientation. This scale assessed the degree to which the teacher works toward content-related, substantive goals. (0 - very low task orientation. Wasted time, pointless wandering discussion, little substantive progress; 4 - High task orientation. Emphasis on attainment of content objectives; class activities are carefully planned; minimum time lost to procedural activity.)

11. Clarity. This scale refers to the degree to which the teacher's presentation of material and his/her substantive interactions with students is understood by them. (0 - Very low clarity. Pupils seem confused, teacher cannot answer student questions; teacher uses unfamiliar concepts. 4 - Very high clarity. Teacher's explanations are easy to understand; pupils' questions are answered adequately. Little or no confusion about the nature of the task.)

12. Enthusiasm. This scale measures whether or not the teacher displays interest, involvement, and vitality in the subject matter or activity. (0 - Low or no enthusiasm. Teacher's behavior is lethargic, dull, routine; teacher displays lack of interest in what is going on. 4 - Very high enthusiasm. Teacher is stimulating, energetic, and alert; uses voice inflection, appropriate gestures and appears interested in what is happening.)

13. Random, memory, or fact questions. Observers indicated whether or not instances of questioning occurred in which students were to supply brief factual answers, or to respond from rote memory.

14. High level, synthesis, why questions. Observers noted whether or not questions occurred requiring reasoning, integration of material, or abstract thinking.

15. Current event, personal questioning. Observers noted whether or not teacher questioned students about their opinions or personal preferences.

In addition to these global scales, the observers were primarily concerned with coding several kinds of classroom events as they occurred. Information about the classroom observation schedule used in the study is available as Appendix C of the main report (Evertson, Anderson, & Brophy, Note 1). The following 15 rate variables were selected because they represent the major categories recorded by observers. They were also likely to contain enough instances to allow us to aggregate scores by month. The following variables are rates of occurrence per hour of observation except for the last variable which observers estimated in minutes at the end of the hour. As in the case of the high inference ratings, mean rate measures were computed for each class for each of the six months.

A brief description of each of the low inference behavioral rate variables follows:

1. Process questions. Questions which require the student to specify the cognitive and/or behavioral steps needed to solve a problem or find an answer.

2. Product questions. Questions which have a specific correct answer which can be expressed in a single word or short phrase. ("When was Jamestown founded?")

3. Call outs. Response opportunities created by students calling out the answers to teacher questions without waiting for permission to answer.

4. Total response opportunities. This measure is the total of all types of teacher questions to students. (Higher level, fact, and memory.)

5. Sustaining feedback. This measure is comprised of several categories of events wherein the teacher sustains a response opportunity and provides the student with another chance to respond. The teacher can repeat, simplify, rephrase, or ask a new question.

6. Student initiated questions. Questions which students, rather than teachers, initiate publically. They are similar to other public response opportunities in that they involve both teacher and student and are monitored by the rest of the class.

7. Student initiated comments. These are comments which students may call out during class discussions, not necessarily in response to teacher-posed questions. They are instead student public contributions.

8. Student initiated call outs. Student contributions to the class discussion which are interjected without permission from the teacher. They differ from numbers 6 and 7 in that those are student contributions for which teachers gave permission.

9. Student created work contacts. These are contacts made by students privately to get information or clarify directions on academic work. These contacts are not intended to be monitored by the whole class.

10. Socializing misbehavior. A category of inappropriate student behavior which students may engage in sometimes with peers. These are not so severe as to be disruptive, but are definitely out of place at the time.

11. Behavioral criticism. Negative teacher evaluations of student behavior. These go beyond the level of simple negation by expressing anger or personal criticism of the student and his behavior.

12. Mild misbehavior. This measure consists of several categories of student behaviors judged to be inappropriate, but nondisruptive, such as inattention to task, chatting with neighbors quietly, or entering class late.

13. Serious misbehavior. Student behaviors judged to be extreme and disruptive to the class. These include sassing or defying the teacher, verbal or physical aggression, leaving class without permission, and baiting the teacher verbally.

14. Social contacts. These contacts are nonacademic in nature, but initiated by either teachers or students as means of exchanging greetings or to convey some personal message.

15. Time in seatwork. This category is composed of an estimate of the amount of time that the majority of the class was engaged in seatwork.

Data Analysis

For each of the thirty dependent variables, a one-between (math, English), one-within (six months), fixed effects analysis of variance was computed. Because some of the 134 classes were not observed during one or more of the six months, and because some ratings were omitted

occasionally, the available N for analysis was less than complete for all variables.

Results

Reported in Table 1 are the chance probability values for the two main effects (subject matter and time of year) and the interaction in each of the 30 analyses of variance. Table 2 contains means for the months main effects. Cell means for significant interaction effects may be found in Table 3.

Subject Matter Differences

Eight high and two low inference variables yielded significant differences for the subject matter main effect. English classes were rated higher on Attention, Positive Affect, Clarity, Enthusiasm, and Personal Questions. More student-initiated comments were also recorded in English classes. Math classes were rated higher on Teacher Presentation of Information, Passive Pupil Behavior, and Convergent Evaluation. Math classes also spent more time in seatwork. These differences are not surprising, given the type of activities which teachers in these subject areas initiate. Math classes were more often presented new material in lecture format, and the usual student behavior was passive assimilation of information. Questioning frequently took the form of probing and checking for understanding.

On the other hand, in English classes, there was more discussion, use of oral readings, and a wider variety of activities were employed, which included use of drama and audiovisual aids. Evertson, Anderson, Edgar, Minter, & Brophy (Note 2) provides a more complete discussion of subject matter differences.

Table 1

Results of Analyses of Variance

High-inference Variables	N Classes M	N Classes E	Chance p SUB	Chance p MO	Chance p SXM
1. Attention	40	63	.001	< .0001	.05
2. Teacher initiation	38	54	ns	.006	.002
3. Pupil interaction	40	63	ns	.001	ns
4. Teacher presentation	40	60	.002	ns	ns
5. Negative affect	40	63	ns	.002	ns
6. Positive affect	40	63	.004	.04	ns
7. Higher cognition	37	48	ns	< .0001	ns
8. Passive pupils	40	62	.002	.003	ns
9. Convergent evaluation	38	49	.01	< .0001	ns
10. Task orientation	40	63	ns	.05	ns
11. Clarity	36	56	.007	ns	ns
12. Enthusiasm	40	63	.0009	.0001	ns
13. Fact questions	25	31	ns	.003	ns
14. Why questions	24	30	ns	ns	ns
15. Personal questions	23	30	.0006	.006	ns

Low-inference Variables	N Classes M	N Classes E	Chance p SUB	Chance p MO	Chance p SXM
1. Process questions	42	60	ns	ns	.03
2. Product questions	42	60	ns	ns	ns
3. Call outs	42	60	ns	.04	.002
4. Response opportunities	42	60	ns	ns	ns
5. Sustaining feedback	42	60	ns	ns	.05

Table 1-Continued

Low-inference Variables	N Classes M	N Classes E	Chance p SUB	Chance p MO	Chance p SXM
6. Student-initiated questions	42	60	ns	ns	ns
7. Student-initiated comments	42	60	.05	.0002	ns
8. Student-initiated call outs	42	60	ns	ns	ns
9. Student work contacts	42	60	ns	.0001	ns
10. Socializing misbehavior	42	60	ns	ns	ns
11. Behavioral criticism	42	60	ns	ns	ns
12. Mild misbehavior	42	60	ns	< .0001	ns
13. Serious misbehavior	42	60	ns	.007	ns
14. Social contacts	42	60	ns	.05	ns
15. Time in seatwork	42	60	.05	ns	ns

Table 2

Main Effect Means for Months

High-inference Variables	Month					
	Nov	Dec	Jan	Feb	Mar	Apr
1. Attention	2.52	2.78	2.95	2.92	2.83	2.70
2. Teacher initiation	1.06	.89	.95	.72	.80	.82
3. Pupil interaction	2.06	2.15	1.94	1.96	1.91	2.37
4. Teacher presentation	.68	.78	.87	.86	.75	.86
5. Negative affect	.90	.94	1.04	1.08	1.23	1.29
6. Positive affect	1.72	1.78	1.80	1.66	1.58	1.56
7. Higher cognition	1.32	1.30	1.23	.91	.85	.91
8. Passive pupils	.84	.86	.69	.76	.95	.97
9. Convergent evaluation	1.75	1.23	1.22	1.21	1.15	1.17
10. Task orientation	2.59	2.66	2.77	2.66	2.59	2.56
11. Clarity	2.66	2.75	2.83	2.84	2.75	2.67
12. Enthusiasm	1.78	1.95	2.10	2.17	2.02	2.06
13. Fact questions	.74	.81	.91	.93	.90	.88
14. Why questions	.54	.67	.68	.69	.58	.62
15. Personal questions	.32	.45	.36	.41	.21	.26

Low-inference Variables	Month					
	Nov	Dec	Jan	Feb	Mar	Apr
1. Process questions	2.11	1.58	1.90	1.15	1.49	1.45
2. Product questions	10.87	10.27	11.50	9.54	9.64	9.86
3. Call outs	1.66	2.22	1.97	2.00	2.61	2.73
4. Response opportunities	13.95	12.79	14.14	11.27	11.73	12.05
5. Sustaining feedback	1.66	1.13	1.72	1.32	1.38	1.16

Table 2-Continued

Low-inference Variables	Month					
	Nov	Dec	Jan	Feb	Mar	Apr
6. Student-initiated questions	3.56	3.01	3.18	3.76	3.59	3.73
7. Student-initiated comments	2.31	1.77	1.45	1.39	1.19	1.57
8. Student-initiated call outs	3.54	3.33	3.16	3.77	3.68	4.16
9. Student work contacts	23.51	20.62	19.65	20.16	18.17	18.41
10. Socializing misbehavior	2.38	2.20	2.00	1.90	1.70	2.22
11. Behavioral criticism	.95	.78	.74	.75	.91	1.01
12. Mild misbehavior	5.68	4.83	4.07	4.16	3.51	4.18
13. Serious misbehavior	1.20	1.20	.94	1.38	1.40	1.80
14. Social contacts	1.61	1.24	1.24	1.52	1.40	1.97
15. Time in seatwork	27.50	28.35	26.86	24.40	25.42	26.30

Table 3

Cell Means for Significant Interactions

Variable	Class	Month					
		Nov	Dec	Jan	Feb	Mar	Apr
Attention (HI-1)	M	2.18	2.62	2.63	2.81	2.63	2.41
	E	2.86	2.95	3.27	3.03	3.03	3.00
Teacher initiation (HI-2)	M	.79	.71	.90	.75	.87	.77
	E	1.34	1.06	.99	.69	.78	.87
Process questions (LI-1)	M	1.09	1.74	2.03	1.33	1.82	1.40
	E	3.13	1.42	1.77	.98	1.16	1.51
Call outs (LI-3)	M	1.46	1.96	1.78	2.27	3.55	3.52
	E	1.87	2.49	2.16	1.73	1.67	1.94
Sustaining feedback (LI-5)	M	2.03	1.21	1.26	1.07	1.29	1.26
	E	1.29	1.05	2.18	1.57	1.47	1.07

Change Over Months

Twelve of the high inference measures and six low inference rates showed significant main effects for the six months. The patterns of means in Table 2 for these variables are described below. Included in these descriptions are the five interaction patterns reported in Table 3. Figures 1 through 20 also illustrate all significant change patterns graphically.

Student attention gradually increases from November to a peak in January and then falls again through April. While this effect occurs for both subject matter areas, it is much more pronounced in English

classes. It should also be noted that in absolute terms, student attention is well above the midpoint on the observation scale. (i.e., While there are significant differences across time, these differences are not dramatic and do suggest that, on the average, most students are attentive much of the time.)

Teacher initiated problem-solving is highest in November, falls to a low in February, then rises somewhat. This effect appears only for English classes and might be explained by the fact that English teachers were leading more class discussions in the first month of data collection. This, as well as other of our data, suggests that at least initially, teachers who are being observed for the first time attempt to teach more nearly like their ideal model of good teaching, and many English teachers were trained to conduct discussions as a regular part of their preparation.

Pupil-pupil interaction increases sharply in April. Many teachers nominate this time of the school year as the most difficult because many students are only waiting for school to end for summer vacation. More pupil-pupil interaction suggests that teachers are allowing more pupil talk and more pupil participation and are "letting up."

Negative affect rises steadily from November to April. This trend indicates that negative affect is present to some small extent in most classes, but by April the average incidence of negative affect is four to six mildly negative behaviors in an observation period. This trend is the most pronounced of any of the process measures, suggesting that as the school year winds to a close, patience and good temper begin to wear thin.

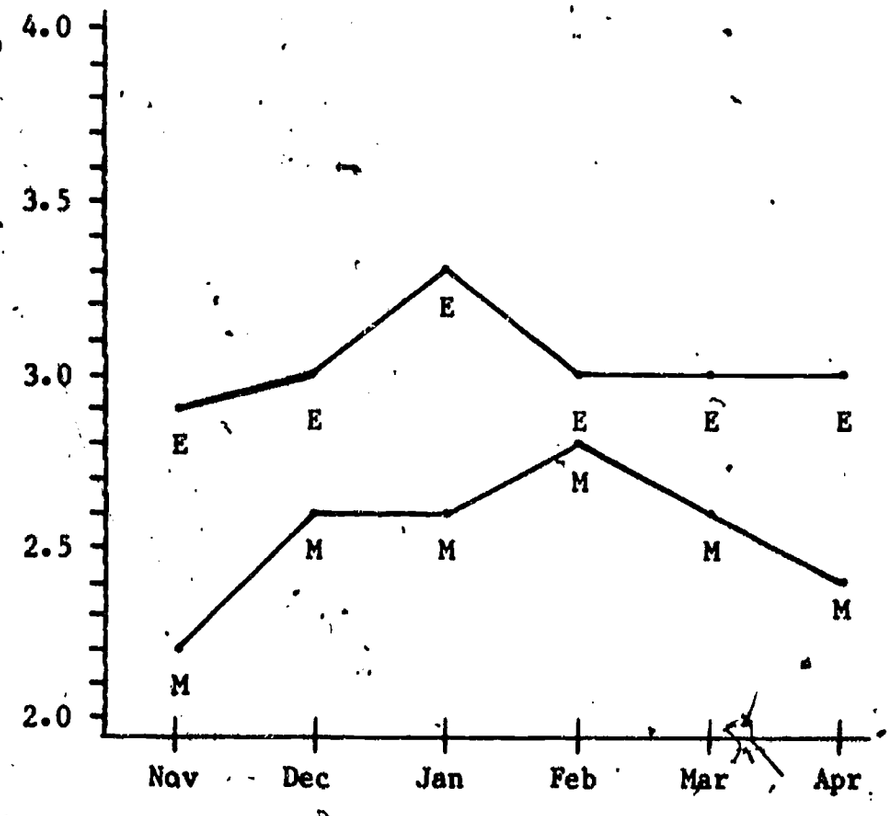

Figure 1. HI-1 Attention

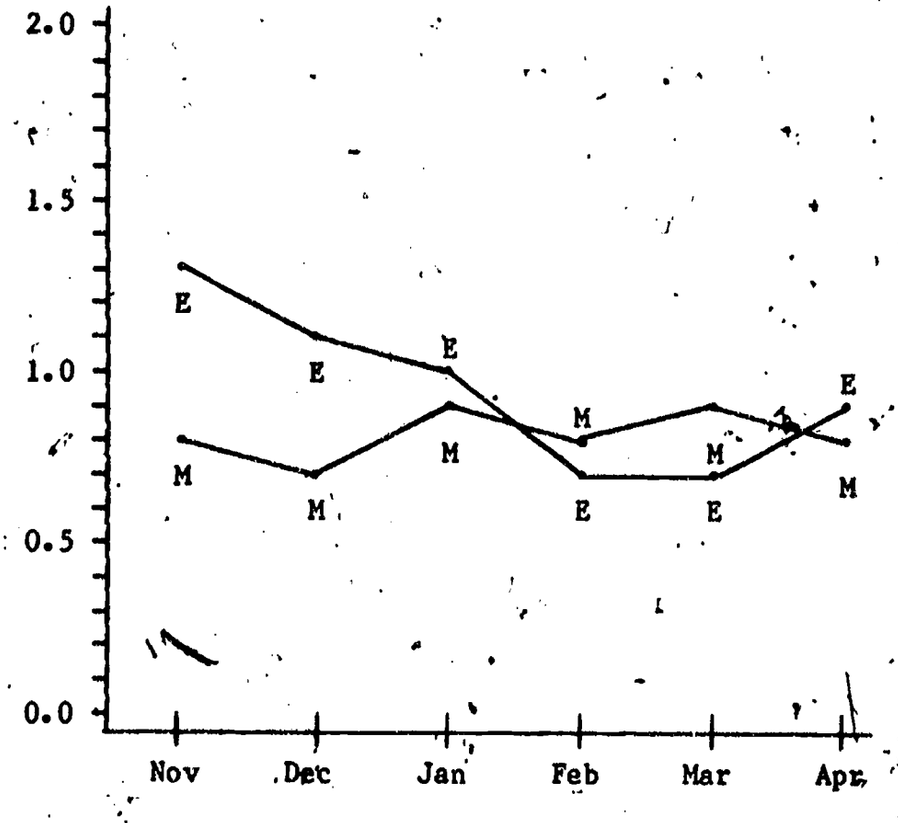

Figure 2. HI-2 Teacher Initiation

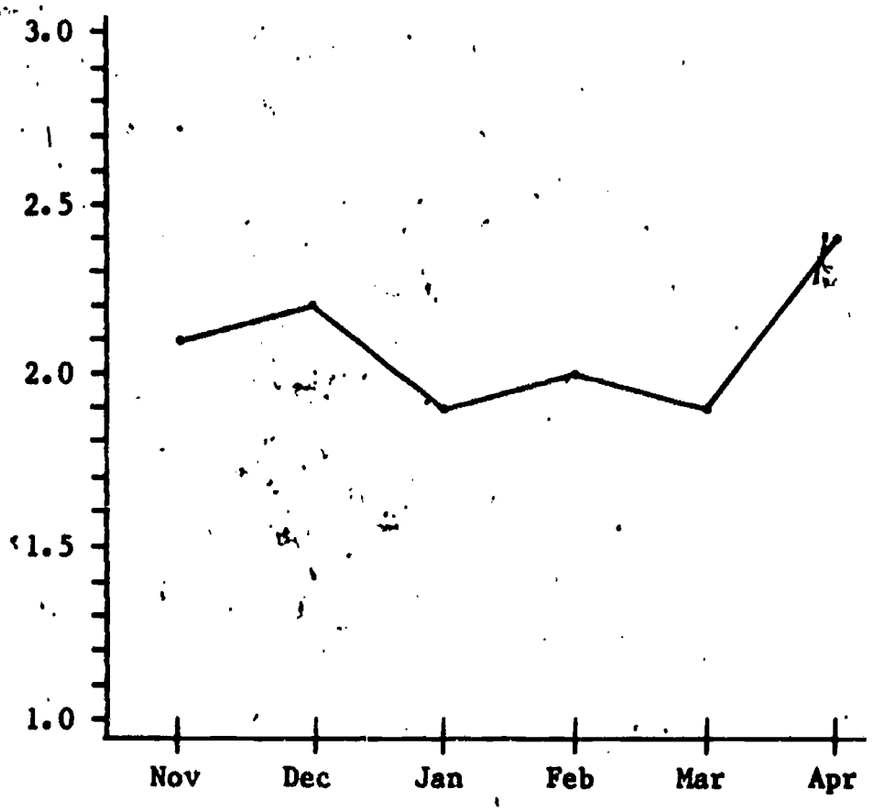

Figure 3. HI-3 Pupil Interaction

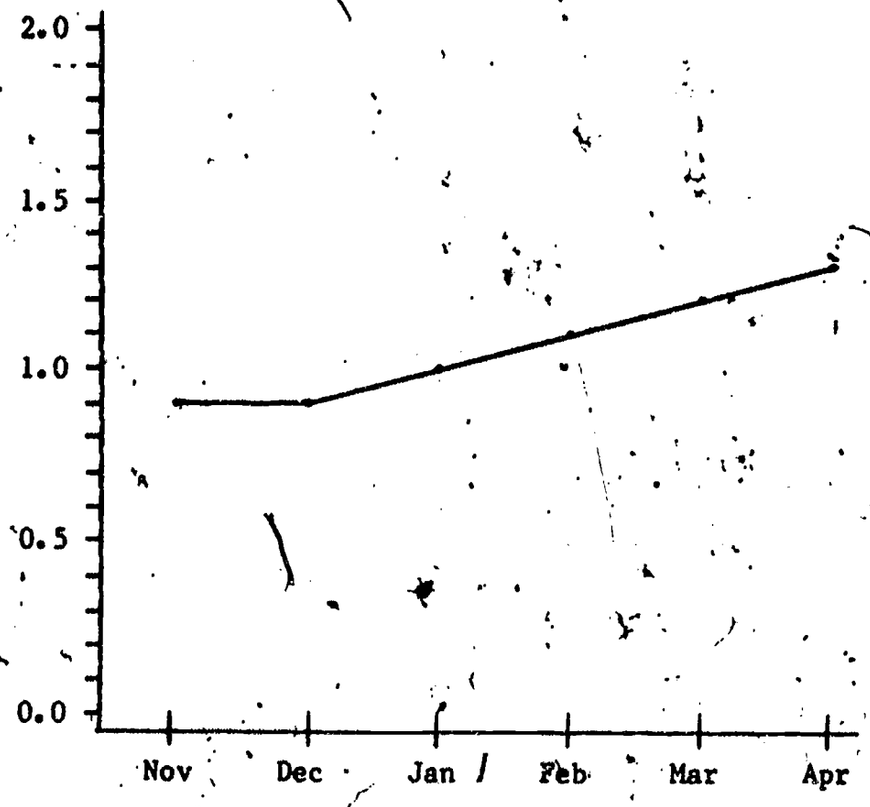

Figure 4. HI-5 Negative Affect

Support for this is provided by the trend for positive affect. This measure increased slightly and then decreased to the end of the year. The decline in positive affect is not marked even though it is statistically significant. In general positive affect varies from "occasional smiles or praise by the teacher," to "some positive, but perfunctory acceptance of pupil answers," toward the end of the year.

Higher cognitive level student behavior, (i.e., pupil verbal behaviors that show indications of more complex cognitive processes, generalizations, or inferences) is higher in the first three months than in the last three. This suggests that, for whatever reason, activities which require students to think through or to analyze and infer occur less often toward the end of the school year. Possibly activities such as these slow the lesson pace and teachers may shift to activities which are more likely to hold attention and ensure cooperation toward the end of the year.

A related finding is that passive pupil behavior shows an opposite trend suggesting less active student participation toward the end of the year.

As mentioned earlier, convergent evaluation is high early in November and remains constant through the rest of the year.

Task orientation shows a weak trend suggesting that there is more of this type behavior in January than in the rest of the year. A similar pattern is seen for enthusiasm; which rises steadily through February and then drops off toward the end of the year.

The global ratings of instructional behavior with few exceptions point to a leveling off period toward the end of the school year. This

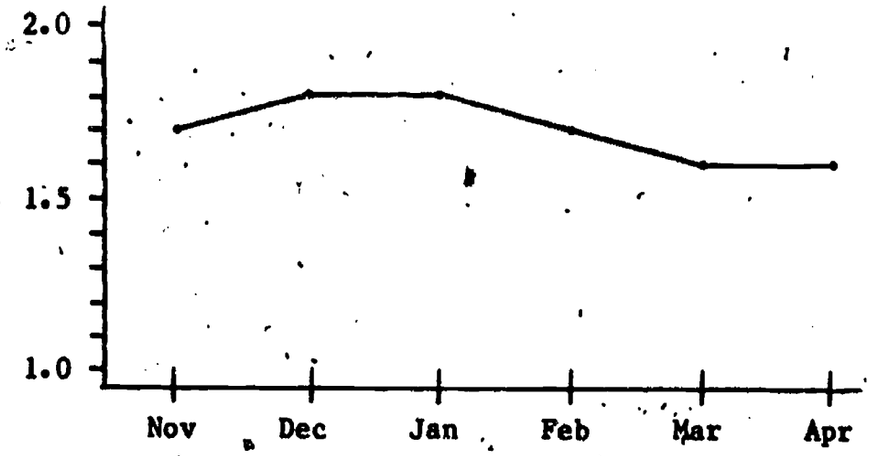

Figure 5. HI-6 Positive Affect

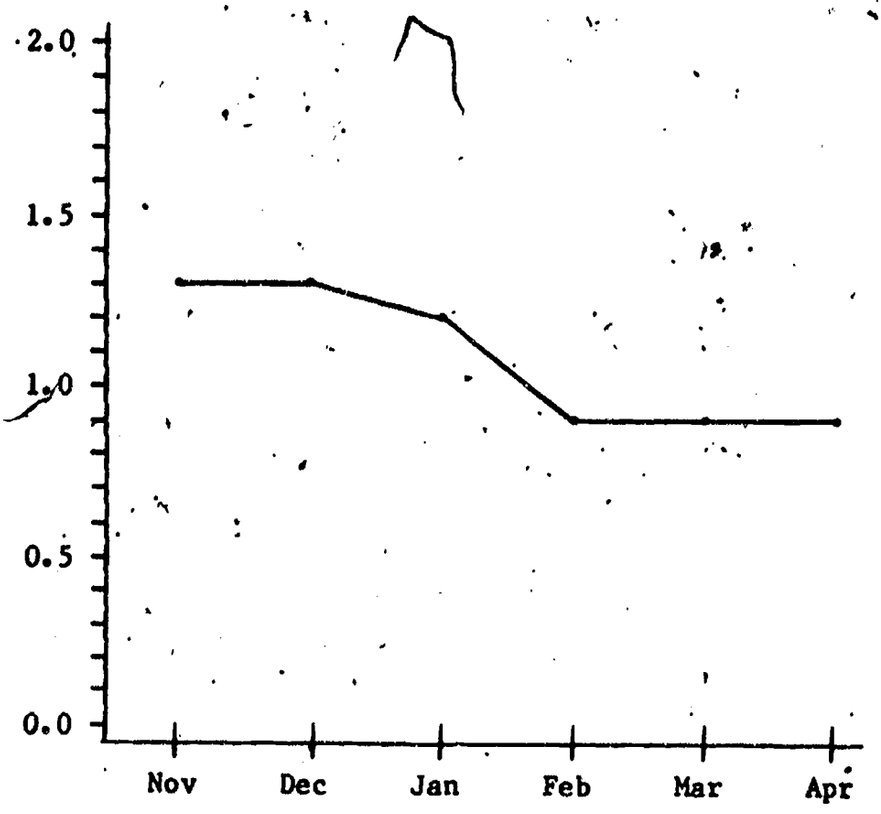

Figure 6. HI-7 Higher Cognition

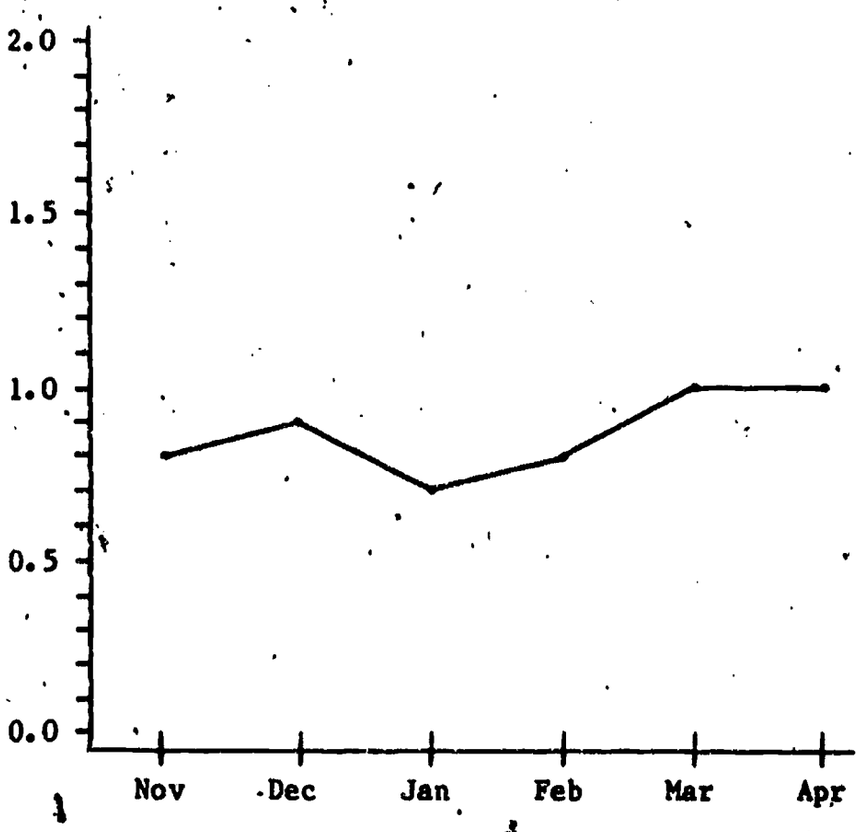

Figure 7. HI-8 Passive Pupils

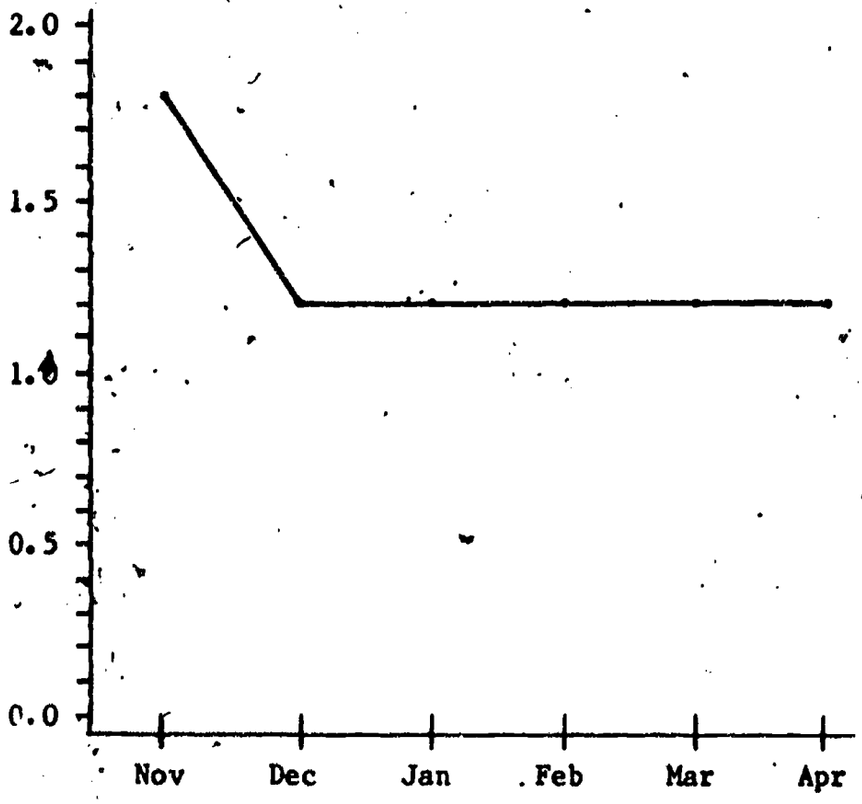

Figure 8. HI-9 Convergent Evaluation

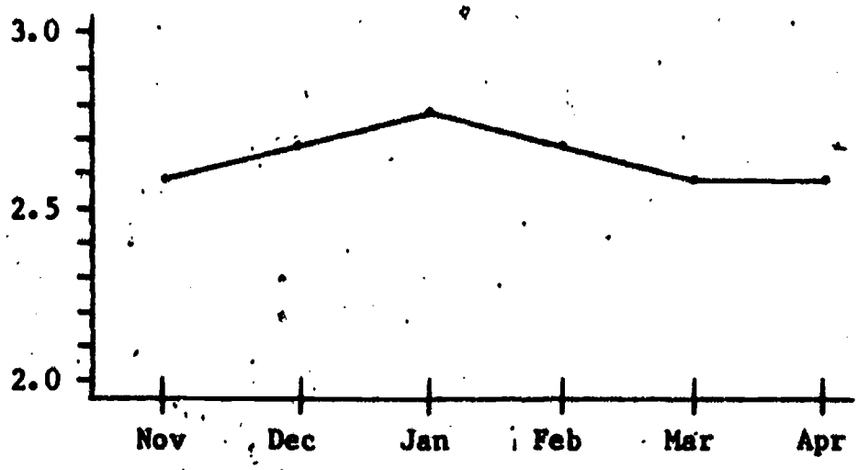

Figure 9. HI-10 Task Orientation

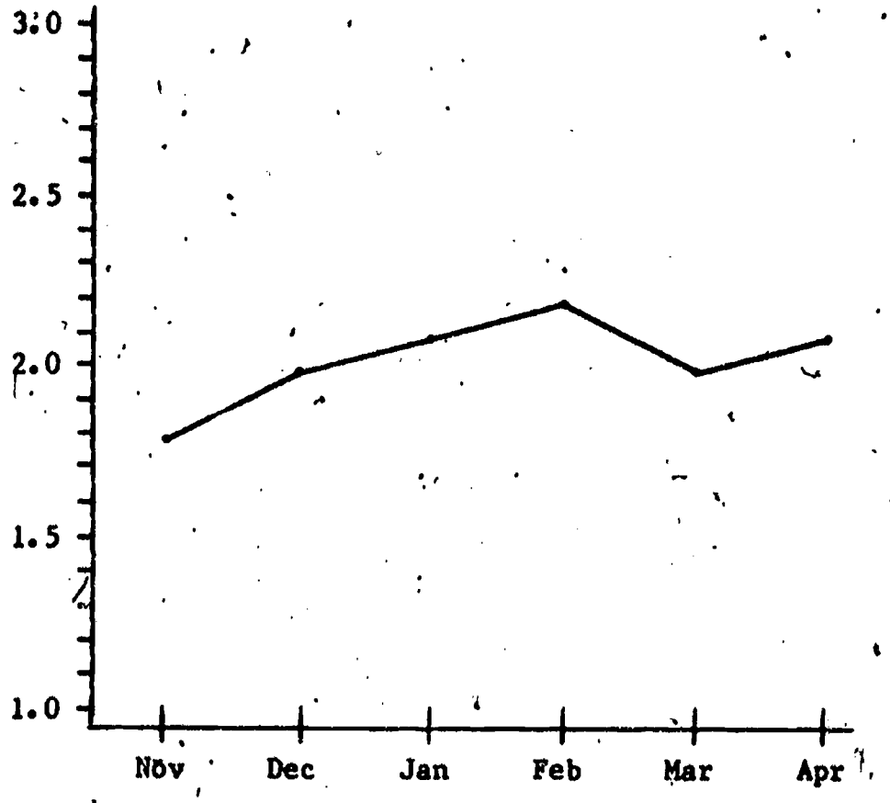

Figure 10. HI-12 Enthusiasm

leveling appears to be accompanied by more passivity, negative affect, and pupil-pupil interaction, and less task orientation, enthusiasm, fact or personal questioning, and less higher cognitive level student reason , or inferential behavior. Several of the global ratings and some of the behavioral rates to be discussed show peaks or leveling off in January and February at mid year. One explanation for increased task orientation at mid year is that the school district begins achievement testing in March and teachers are preparing their students for them. Another plausible explanation is that teachers have paced presentation of new concepts and material to peak at mid year and the remainder of the year is used for practice drill and consolidation.

Behavioral rates

The interaction for process questions is caused by an exceptionally high number of these questions in English classes at the beginning of observation in November. Students calling out answers rises until December, then drops off in English classes, but not in math. In these classes they continue to rise to a peak in March and April. One suggestion is that math teachers are letting up on requirements to raise hands and get permission before answering.

Sustaining feedback (a general category of teacher behavior aimed at giving students multiple opportunities to respond to teacher-initiated questions) shows differential effects for the subject areas. Sustaining feedback in math classes remains generally low throughout the year, but in English it rises to a peak in January, and then drops. This corresponds with trends for other process measures which show similar rises in January or February and decrease during the remainder

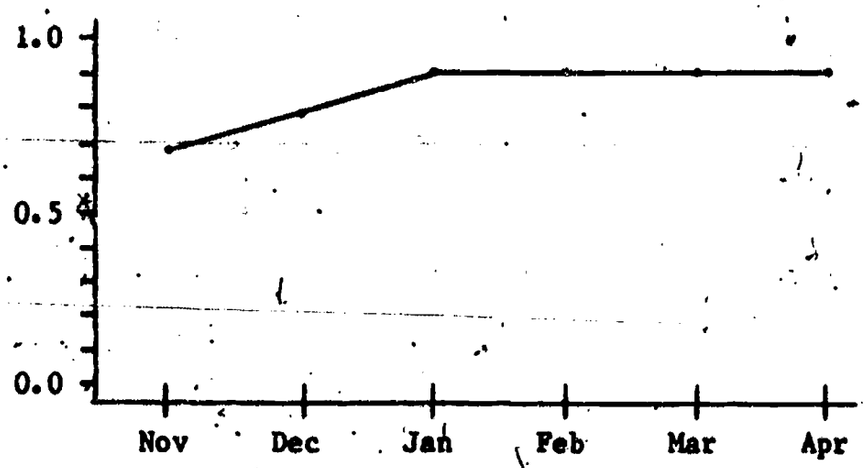

Figure 11. HI-13 Fact Questions

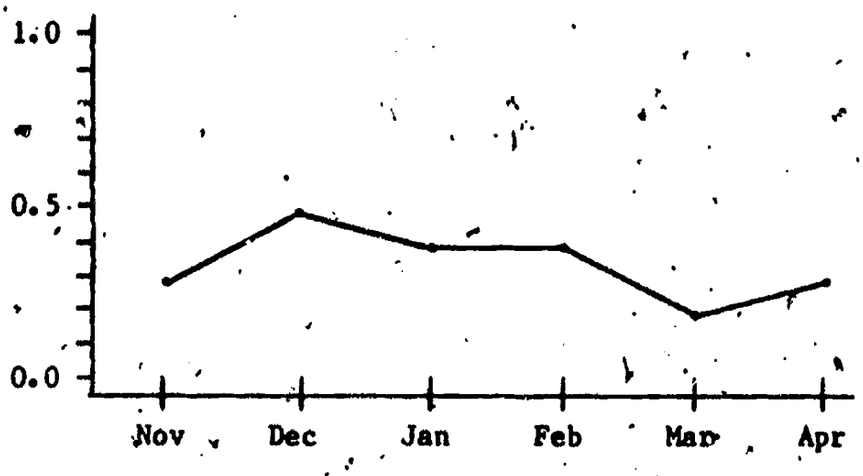

Figure 12. HI-15 Personal Questions

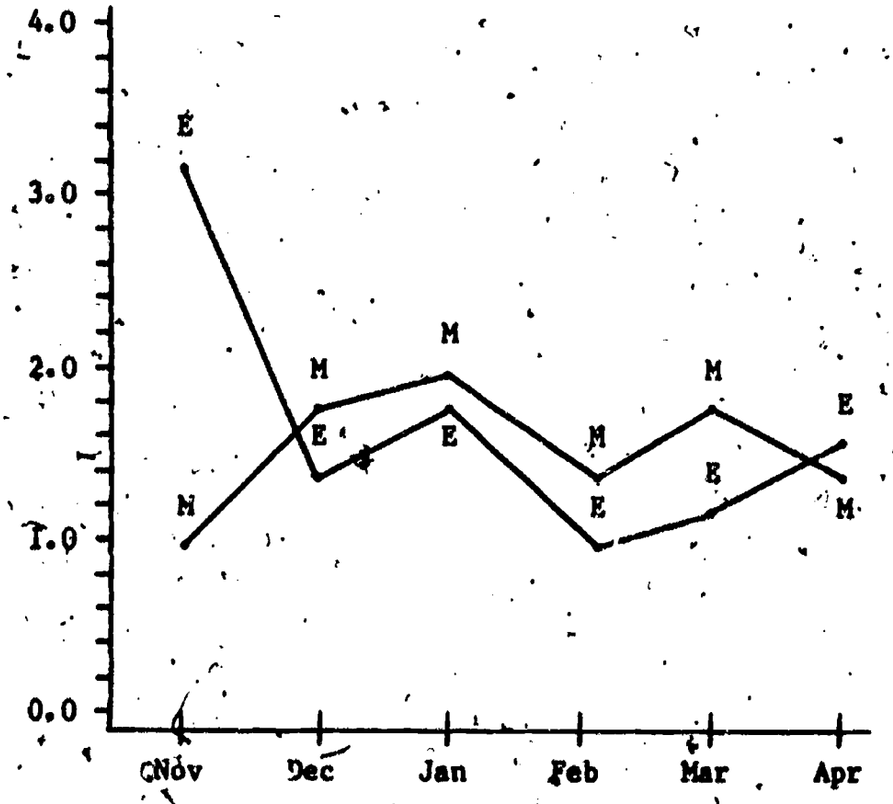

Figure 13. LI-1 Process Questions

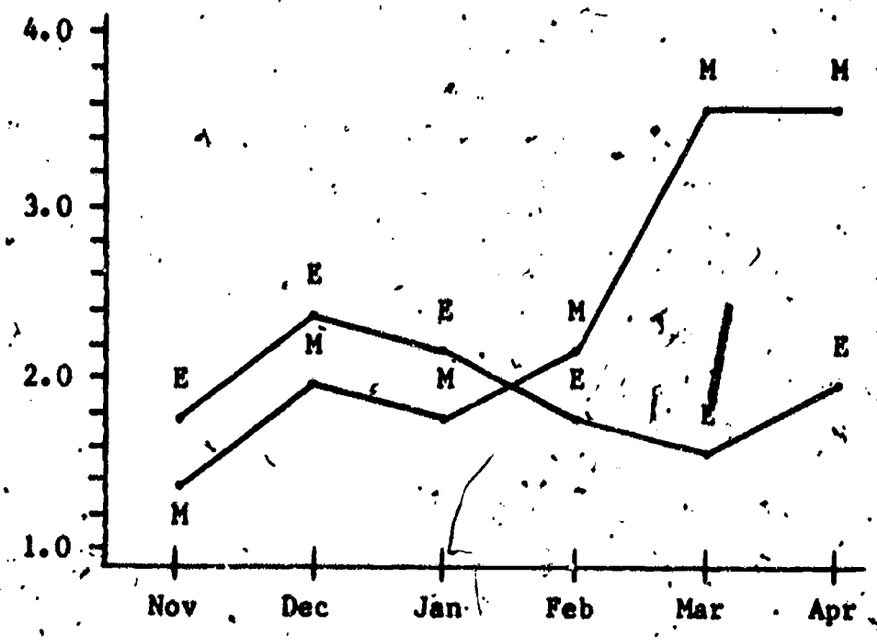

Figure 14. LI-3 Call Outs

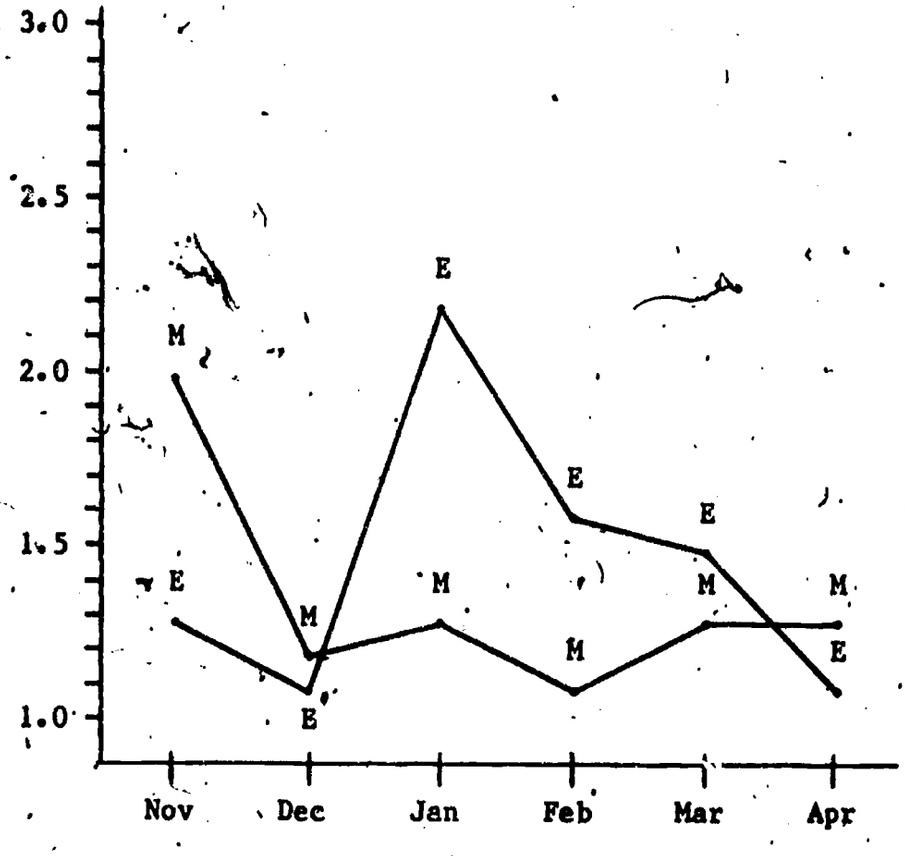

Figure 15. LI-5 Sustaining Feedback

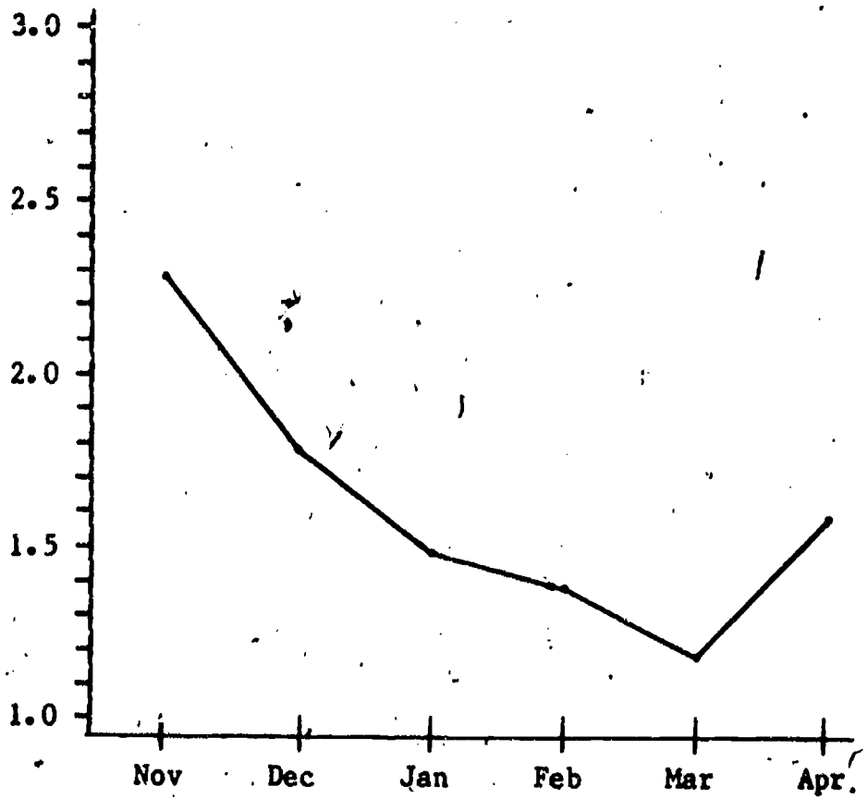

Figure 16. LI-7 Student Comments

of the year. This suggests that sustaining feedback, where the teacher concentrates attention on one student, slows the lesson pace and is less likely to hold class attention.

Student initiated public comments fall steadily from November to December, then rise somewhat in April, although the rates are low in general (from slightly more than two to less than two per hour at the end of the year.) Although this is statistically significant, there is some question about whether this decrease affects the flow of events in the classroom.

On the other hand, student initiated private work contacts show a steady decline over the six months, except for a slight rise in February. One explanation is that students are becoming used to the routines, and as the year progresses (with the exception of February) they encounter less new or unfamiliar material. In any case, student private contacts with their teachers decreases about 22%.

Trends for mild and serious misbehaviors are also complementary. Mild misbehaviors, which include such things as student attention, daydreaming, or chatting with neighbors, steadily decline throughout the year except for a rise in April. Serious misbehaviors, including student behaviors which are disruptive, increase from slightly more than one instance per hour to almost two instances per hour.

The last significant finding is for social contacts. These can be initiated either by teacher or student. The average per class period is less than two per hour; at the beginning of the year these contacts tend to occur closer to one per hour, but by the end of the year this increases to nearly two per hour. Again this may not seem on the

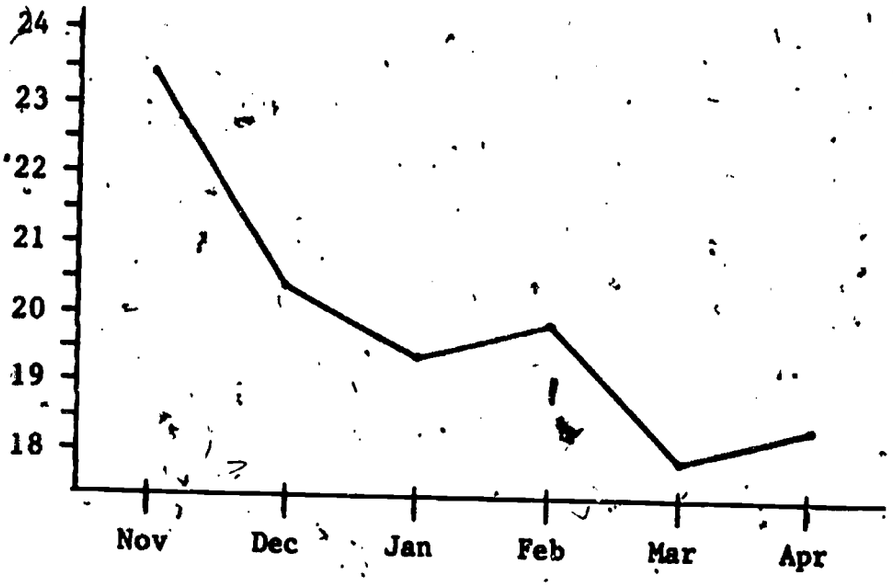

Figure 17. LI-9 Student Work Contacts

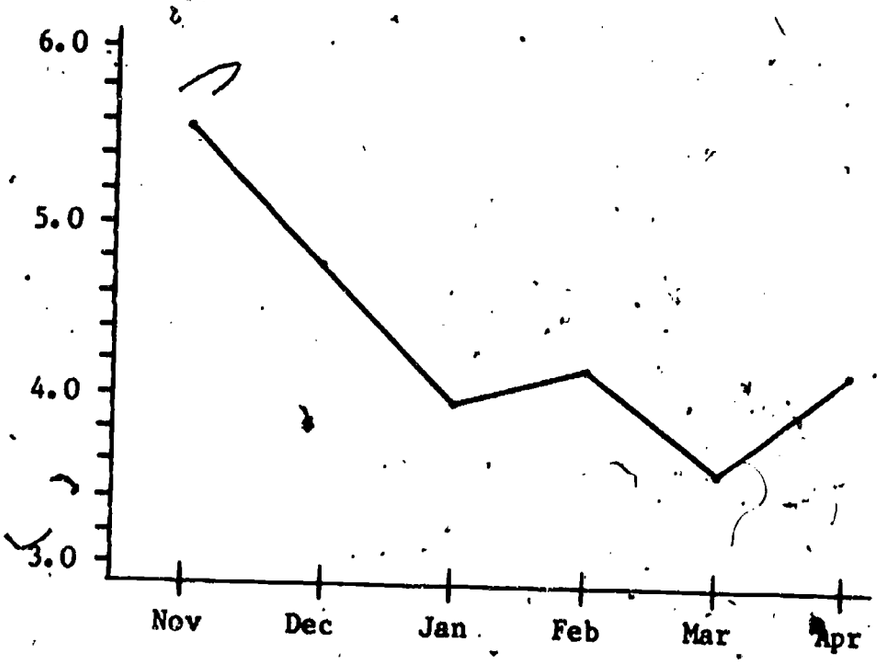

Figure 18. LI-12 Mild Misbehavior

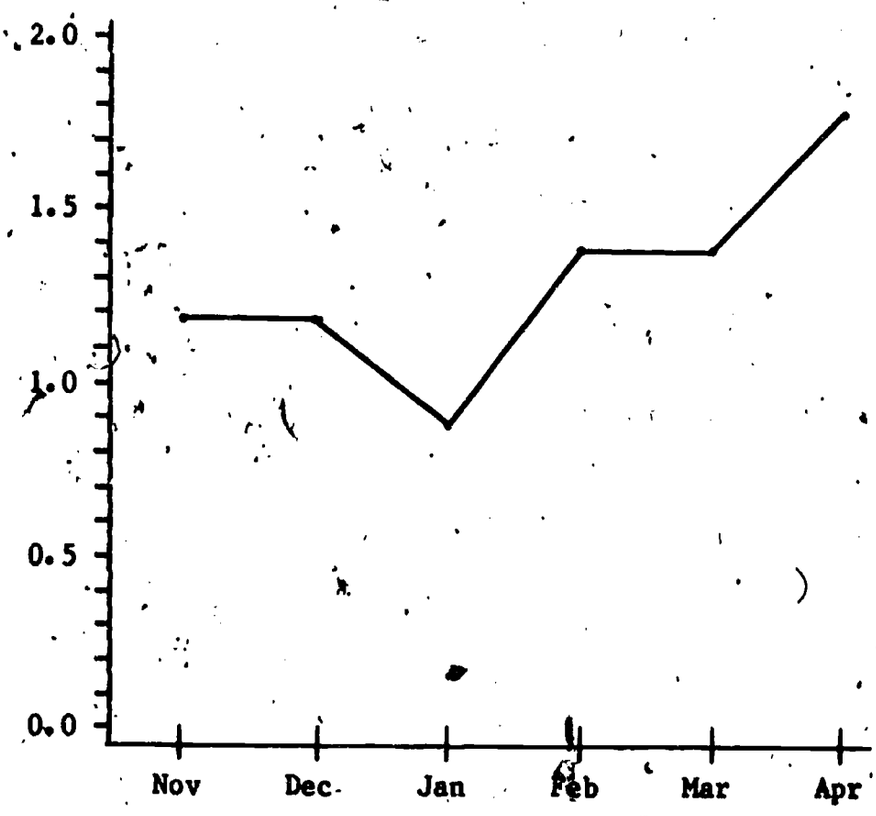

Figure 19. LI-13 Serious Misbehavior

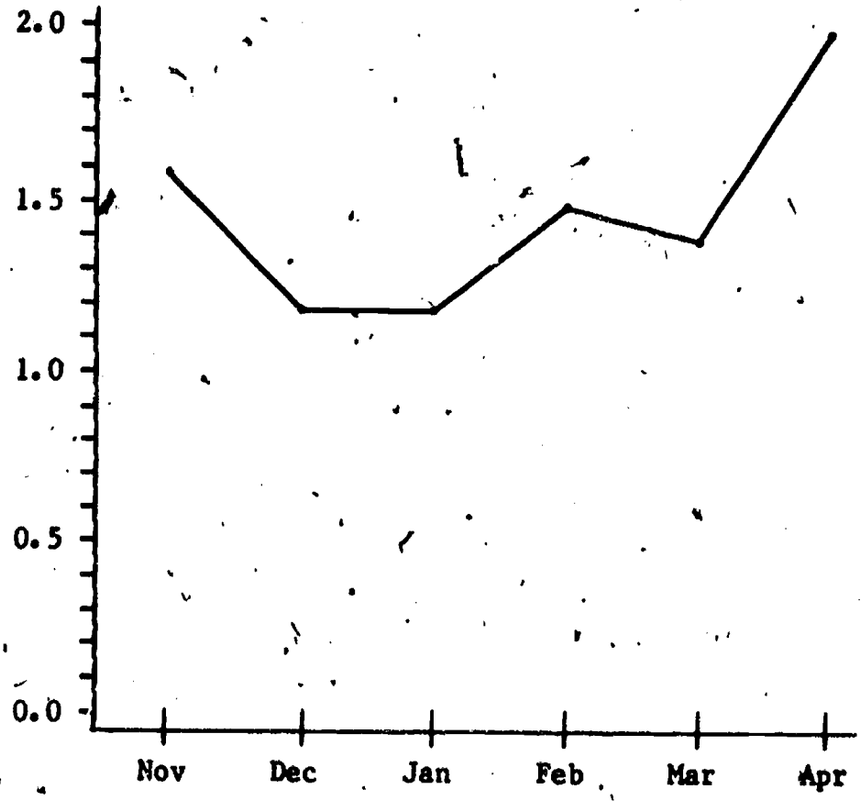

Figure 20. LI-14 Social Contacts

surface to be a meaningful difference, but coupled with findings for the other process measures it adds to the general picure of less task involvement, more relaxed and less controlled atmosphere, a general letting up on the part of teachers.

Discussion

Examination of the absolute differences in means for each of the six months suggests that there are no dramatic changes. For example, negative affect moves from a few instances to a moderate amount by April. What is apparent is a gradual increase in student misbehavior and call outs over the year and a gradual decrease in public questioning or work related activities. What is more, these trends are present for both subject matter areas.

The research literature provides few studies which have systematically investigated trends such as those reported here. A few studies (Flanders, Morrison, & Brode, 1968; Rosenshine, 1973) indicate that there is a significant loss in positive attitudes toward teachers and schoolwork during the school year, and that this loss appears to be unrelated to IQ or socio-economic status.

Data from the Program on Teaching Effectiveness (Stayrook & Crawford, Note 3) indicates that in their two treatment groups, there were decreases in teachers' allowing student call outs across three points in the year, although the control group increased. Other results suggest that there were more effects for time of year than for treatment.

Stallings, Needels, and Stayrook (Note 4) found similar trends in their data from high school reading classes. Control group data show

increases in social comments and managerial-procedural activities performed by the teacher, and decreases in adult monitoring (moving around the room), across the three points in the year (Fall, Winter, and Spring). The treatment group, however, did not show these trends. Means for the treatment group appeared to be similar across the three time periods.

In summary, we note the following:

1. In many ways these results verify common sense. Teachers and other practitioners often mention the special conditions of teaching at the end of the year. However, it is interesting to note that while there were indications that "life in classrooms" deteriorated toward the end of the year, these changes were not dramatic. While many of the measures showed small, but significant trends over time, several did not (amount of time in seatwork, behavioral criticism, student initiated questions and call outs). In general, though misbehavior tends to increase slightly and teachers appear to lighten up on requirements to dig into school work, few of these process measures (task orientation, attention, student initiated comments, social contacts) show dramatic increases or decreases.

2. Investigators who are planning studies in classrooms which extend over only a short period of the year should be aware of the possible biasing effect in their data which comes from sampling either early or late in the school year.

3. These analyses reveal findings for data collected after the first two months of school; there is no comparable information about the variations in process measures taken at the beginning of school.

Other research studies (Emmer, Evertson, & Anderson, 1979; Evertson & Anderson, in press) are finding that this is a critical time of the school year, particularly for measures which reflect student participation and classroom behavior.

4. Another unanswered question that might be asked at this point is whether the trends described here obtain equally for more effective and less effective teachers. Such analyses were done using mean residual gains in class achievement to divide the samples. No more significant interactions were obtained than would be expected by change. Stallings' data (Note 4), however, do suggest that treatment can reverse or moderate what appears to be less satisfactory pupil behavior near the end of the school year.

Reference Notes

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2. Evertson, C. M., Anderson, L. M., Edgar, D., Minter, & Brophy, J. E. Investigations of stability in junior high school math and English classes: Texas Junior High School Study (R&D Rep. No. 4051), Austin, Texas: Research and Development Center for Teacher Education, 1977.

3. Stayrook, N., & Crawford, J. An experiment on teacher effectiveness and parent-assisted instruction in the third grade: The observational data. Stanford: Center for Educational Research at Stanford, Program for Teaching Effectiveness, 1978.

4. Stallings, J., Needels, M., & Stayrook, N. The teaching of basic reading skills in secondary schools, Phase II: Final report. Menlo Park: Stanford Research Institute International, 1979.

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